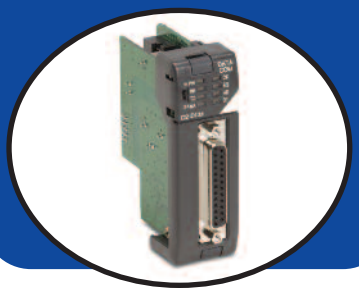
Serial Data Communications Module

Data Communications Module

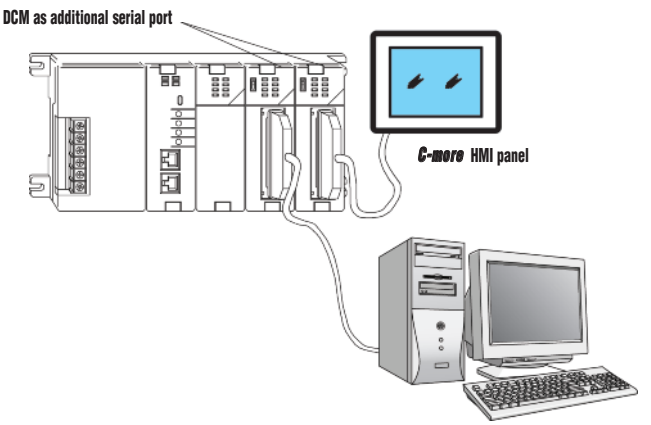
D2-DCM $335.00



The D2-DCM Data Communications Module is used primarily for three reasons:

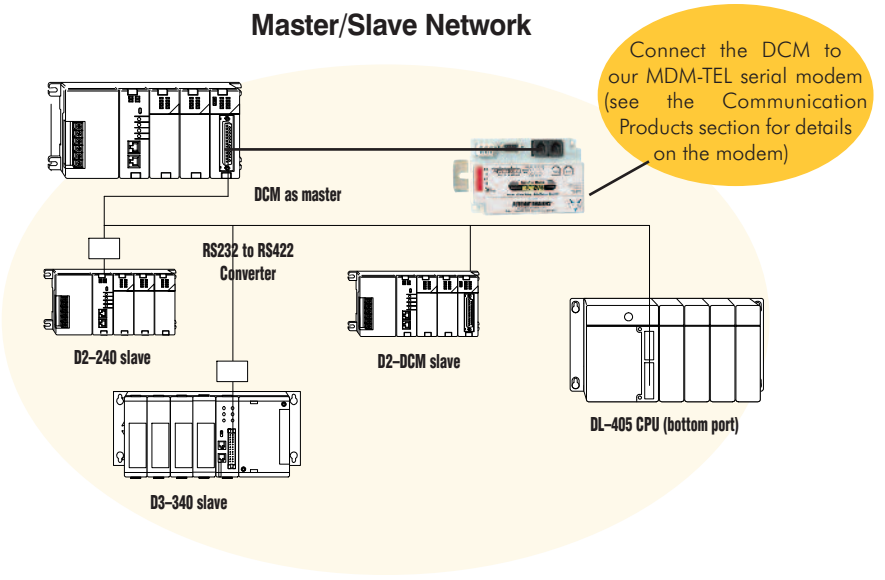
- Extra communications port to connect a PC, operator interface, etc.
- Network interface to *Direct*NET
- Network interface to a Modbus® network using the RTU protocol

Specifications	
Module Type	Intelligent
Modules per CPU	7 maximum, any slot except slot 0, CPU base only
CPUs Supported	D2-240 (firmware V1.8 or later), D2-250-1 and D2-260
Communications	RS-232/422 signal levels, *Direct*NET Master/Slave, K-sequence or Modbus RTU Slave protocol, Baud rate selectable from 300 baud to 38.4 Kbaud, Odd or No parity, *Direct*NET HEX or ASCII mode
Recommended Cable	Belden 9729 or equivalent (for RS-422)
Field Wiring Connector	25-pin D-shell connector
Internal Power Consumption	300 mA maximum at 5 VDC, (supplied by base power supply)
Operating Environment	0°C to 60°C (32°F to 140°F), 5% to 95% humidity (non-condensing)
Manufacturer	Koyo Electronics



Extra communications port

If additional communication ports are needed, they can easily be added by installing DCM modules. This allows additional connections of devices, such as operator interfaces, PCs, etc. Since the DCM does not require any programming, you can set the DCM communication parameters, connect the cables, and start transferring data. Make sure the device has a DL205 compatible driver.


Master/Slave Network
Connect the DCM to our MDM-TEL serial modem (see the Communication Products section for details on the modem)
DCM as master
RS232 to RS422 Converter
D2-240 slave
D2-DCM slave
DL-405 CPU (bottom port)
D3-340 slave

*Direct*NET network interface

The DCM can be used as a network interface for applications requiring data to be shared between PLCs, or between PLCs and an intelligent device such as a host PC. The DCM connects easily to *Direct*NET. This network allows you to upload or download virtually any type of system data including Timer/Counter data, I/O information, and V-memory information from any *Direct*LOGIC or compatible PLC. The DCM allows the DL205 to function as a network master or network slave.

Modbus RTU interface

The DCM can be used as a slave station interface to connect your DL205 system to a Modbus® network using the Modbus RTU protocol. The host system must be capable of issuing the Modbus commands to read or write the appropriate data. Remember that the bottom port on the D2-250-1 and D2-260 CPUs can act as a Modbus master.

Serial Module for WinPLC and EBC Systems

Serial Communications Module for WinPLCs & EBCs

H2-SERIO $176.00
H2-SERIO-4 $176.00

H2-SERIO / H2-SERIO-4 Specifications		
	H2-SERIO	**H2-SERIO-4**
Module Type	Intelligent module for use with H2–WPLC-xx or H2-EBC100	
Approvals	cUL Listed, file number E185989	
Number of Serial Ports per Module	3 ports: all RS-232 (RJ12 jack)	3 ports: 2 RS-232 ports (RJ12 jack) and 1 RS-422/485 (5 position terminal strip)
Signals	RS-232: CTS, RXD, TXD RTS, GND RTS transmision delay times: 5, 50, 250 and 500 ms	RS-232: CTS, RXD, TXD RTS, GND RTS transmision delay times: 5, 50, 250 and 500 ms RS-422 (4 wire) : TX+, TX-, RX-, RX+, GND RS-485 (2 wire): Data+, Data-, GND
Number of Modules Supported per H2-WinPLC-xx	3	
Number of Modules Supported per H2-EBC100	8	
Recommended Cables	Belden 9729 or equivalent	RS-232 ports: Belden 9729 or equivalent RS-422/RS-485 terminal: 16-28 AWG solid or stranded conductor (1.5mm2) Wire strip length: 0.24-0.27 inches (6-7 mm); Screw torque: 1.7 in-ibs (0.2 Nm)
Protocols Supported	Serial ASCII (full-duplex) and Modbus RTU slave	
Power Consumption	80 mA @ 5 VDC	
Baud Rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Parity	None, odd, even	
Start and Stop Bits	1, 2	
Operating Environment	0 to 60°C (32°F to 140°F), 5% to 95% RH (non-condensing); No corrosive gases, Pollution level 2; Vibration: MIL STD 810C 514.2; Shock: MIL STD 810C 516.2	
Storage Temperature	-20 to 70°C (-4°F to 158°F)	
Firmware Note	The H2-EBC requires firmware version v2.1383 or later to support the H2-SERIO or H2-SERIO-4.	

Serial I/O modules for WinPLCs

Add serial ports to your WinPLC system by simply plugging the H2-SERIO or H2-SERIO-4 modules into the DL205 I/O base. These serial modules are used exclusively with the WinPLC. The WinPLC communicates with the H2–SERIO(-4) module across the DL205 backplane.

The H2-SERIO module has three RS-232C ports, while the H2-SERIO-4 module has two RS-232C ports and one RS-422/485port.

H2-SERIO **H2-SERIO-4**

Up to ten serial ports on a WinPLC system

The WinPLC has one built-in serial port. You can add as many as nine additional serial ports for Think & Do Studio or Think & Do Live! applications requiring multiple serial devices, such as barcode scanners. Connect to just about any serial device that communicates ASCII protocol. The H2-SERIO(-4) can also serve as a Modbus RTU slave.

Processing large amounts of serial data with a WinPLC

While the H2-SERIO(-4) module will support virtually any serial device, processing large amounts of serial data will increase the system response time. This is important to consider when using multiple H2-SERIO(-4) modules, especially in a WinPLC local base with an H2-ERM(100) or H2-CTRIO(2).

Serial Modules for WinPLC and EBC Systems

Separate communications parameters for each port

Use Think & Do software packages to set baud rate, parity, data bits, and stop bits for each serial port. Choose from 300 baud to 57.6K baud communication speeds. Think & Do or Think & Do Live! allows each port to be designated as a Modbus slave or a generic serial device. Each port on the H2–SERIO(-4) module is capable of full hardware handshaking.

Easy serial communications

All Think & Do PC control software products include advanced string and array functions that make transmitting, receiving and manipulating serial data a snap.

Using H2-SERIO(-4) in a PC-based control EBC system

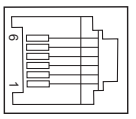
Think & Do versions 6.5 and later support the use of up to eight H2-SERIO(-4) modules per EBC node in a PC-based control system. The master must be a PC running Think & Do 6.5 or later. This does not apply to a WinPLC system with an ERM module used for remote I/O.

The Think & Do features described here for the WinPLC (receiving and manipulating data) also apply to a PC running the Think & Do software.

H2-SERIO(-4) Wiring: RS-232

RS-232

6 pin RJ12 Phone Type Jack – both por

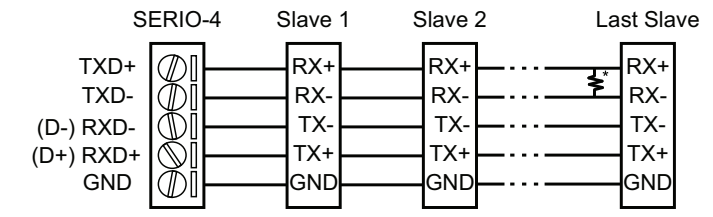


H2-SERIO(-4) RS-232 Pin Descriptions		
1	0V	Power (-) connection (GND)
2	CTS	Clear to Send
3	RXD	Receive data (RS-232)
4	TXD	Transmit data (RS-232)
5	RTS	Request to Send
6	0V	Signal Ground (GND)

H2-SERIO-4 Wiring: RS-422/485

Set DIP switch S2 on the H2-SERIO-4 to:
1. Activate or deactivate the internal 120Ω termination resistor.
2. Select RS-422 or RS-485 operation.

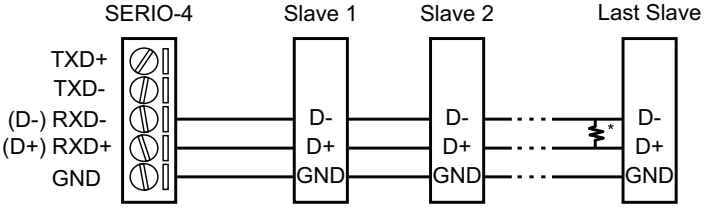
RS-422



(H2-SERIO-4 contains an optional 120Ω termination resistor between RX+ and RX-; use DIP switch S2 to activate or deactivate resistor.)

* User Supplied 120Ω Termination Resistor

RS-485



(H2-SERIO-4 contains an optional 120Ω termination resistor between RX+ and RX-; use DIP switch S2 to activate or deactivate resistor.)

* User Supplied 120Ω Termination Resistor

Ethernet Communications Modules

Ethernet Communications Module

H2-ECOM100 $301.00
H2-ECOM-F $358.00

Overview

Ethernet Communications Modules offer features such as:

- High-speed peer-to-peer networking of PLCs
- Fast updates with *Direct*SOFT Programming Software
- High-performance access for Human Machine Interface (HMI), ERP, MES or other Windows-based software
- Industry standard Modbus TCP Client/Server Protocol (H2-ECOM100)
- Free SDK for custom drivers
- Easy setup

The Ethernet Communication (ECOM) Modules represent a price breakthrough for high-speed peer-to-peer networking of PLCs. No longer are you forced to designate a single PLC to be the network master. Any PLC can initiate communications with any other PLC. Link your PLCs with PCs using industry standard Modbus TCP protocol connected through standard cables, hubs, and repeaters. Or, use our KEP*Direct* I/O Server to link to your favorite HMI/SCADA, data historian, MES or ERP software to *Direct*LOGIC PLCs. Our Lookout*Direct* HMI and our DataWorx data collection software include ECOM drivers. *Direct*SOFT Programming Software can be used to monitor or update the program in any *Direct*LOGIC PLC on the network.

Simple connections

Use Category 5 UTP cables or 62.5/125 ST-style fiber optic cables depending on the requirements of your application. Inexpensive UTP cables can be run up to 100 meters between nodes, and fiber optic cables can be run up to 2,000 meters. Fiber optic cables virtually eliminate electrical noise problems. Use repeaters to extend distances and expand the number of nodes.

Our HA-TADP (10/100Base-T) PC network adapter card and Stride Ethernet switches are compatible with the ECOM modules. See the Communications Products section for information on these items.

ECOM starter kit

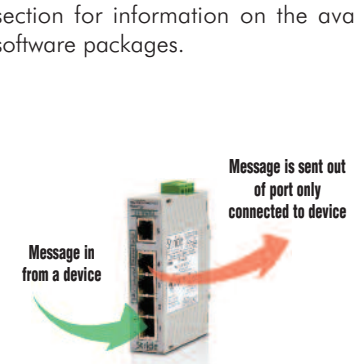
The H2-ECOM-START gives you everything you need to make your first Ethernet network simple to build. It contains an H2-ECOM100 module and instruction manual, a network adapter card (PCI) for your PC, a crossover cable, and a Software Product Showcase Demo CD. The CD contains demo versions of our software products that support the ECOM Modules. See the Software Products section for information on the available software packages.

H2-ECOM100 *IBox* communications instructions

Over 25 Communications *IBox* instructions are available when using the H2-ECOM100 with a DL250-1 or DL260 PLC and *Direct*SOFT5 programming software. These easy-to-use instructions allow you to:

- Enable/disable module DHCP
- Read/write module IP, Gateway and Subnet Mask addresses
- Read/write module ID, Name and Description
- Send E-mail messages
- Read/Write PLC memory to networked Hx-ECOM100 modules
- Read/Write PLC memory to networked Hx-ECOM(-F) modules

See the following page for example Communications *IBox* instructions.



See the Communications section for details on Ethernet Switches

The H2-ECOM100 supports the Industry Standard Modbus TCP Client/Server Protocol

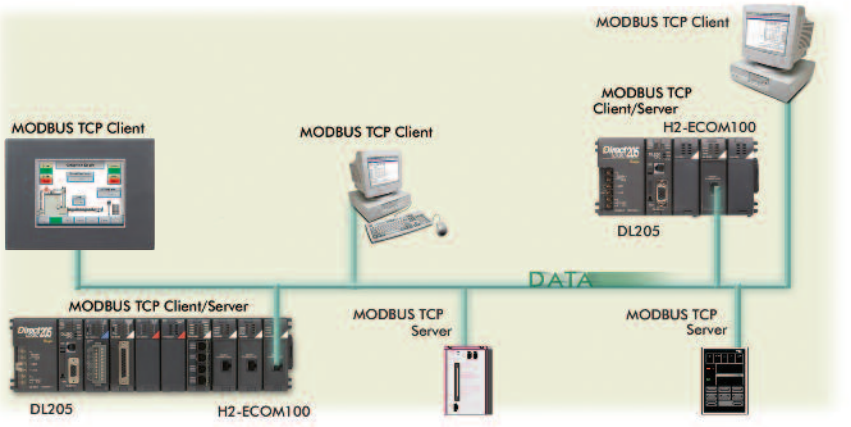
Specifications	H2-ECOM100	H2-ECOM-F
Communications	10/100Base-T Ethernet	10Base-FL Ethernet
Data Transfer Rate	100 Mbps max.	10 Mbps max.
Link Distance	100 meters (328 ft)	2,000 meters (6,560 ft)
Ethernet Port	RJ45	ST-style fiber optic
Ethernet Protocols	TCP/IP, IPX, Modbus TCP, DHCP, HTML configuration	TCP/IP, IPX
Power Consumption	300 mA @ 5 VDC	640 mA @ 5 VDC
Manufacturer	Host Automation Products, L.L.C.	

Ethernet Communications Modules

Modbus TCP support

The H2-ECOM100 supports the industry standard Modbus TCP Client/Server protocol in addition to the standard IP and IPX protocols. This allows the DL205 PLC with an H2-ECOM100 module to serve as a client (master) or as a server (slave) on a Modbus TCP Ethernet network. The H2-ECOM100 can actively issue Modbus commands to other nodes or devices on the Modbus TCP network or simply respond to connected Modbus TCP clients.

Modbus TCP communications architecture



PLC-to-PLC communications

PLC-to-PLC or PLC to a Modbus TCP device communications can be accomplished using standard Read from Network (RX) and Write to Network (WX) instructions (DL240/250-1/260, all H2 series ECOMs and all *Direct*SOFT versions). If you're using our DirectSOFT5 programming software, a DL250-1 or DL260 PLC and an H2-ECOM100, you can use fill-in-the-blank *IBox* instructions to simplify your communications programming. The H2-ECOM100 supports the ECOM100 Configuration *IBox* for use with the ECRX and ECWX *IBox* instructions to read/write to other ECOM(100)s. All H2 series ECOM modules support the NETCFG Configuration *IBox* for use with the NETRX and NETWX *IBox* instructions to read/write to other ECOM modules (remember DL250-1/260 and DSOFT5 required). The Communications *IBox* instructions execute with built-in interlocking to greatly simplify communications programming.

ECOM100 Configuration IBox

ECOM100 Config

ECOM100	IB-710
ECOM100 #	K0
Slot	K1
Status	V400
Workspace	V400
Msg Buffer (65 WORDs)	V400

ECOM100 Read Network IBox

ECOM100 RX Network Read

ECRX	IB-740
ECOM100 #	K0
Workspace	V400
Slave ID	K0
From Slave Element (Src)	C0
Number Of Bytes	K1
To Master Element (Dest)	TA0
Success	C0
Error	C0

H2-ECOM100 has e-mail capability!

The H2-ECOM100 Send EMail (ECEMAIL) *IBox* instruction allows the module to behave as an e-mail client and send an SMTP request to your SMTP Server to send a specified e-mail message to the e-mail addresses in the in *IBox's* To: field. The Body: field allows you to embed real-time data in your e-mail message. The DL50-1/260 CPU and *Direct*SOFT5 are required to use the *IBox* instructions.

ECOM100 Send EMail IBox

ECOM100 Send EMail

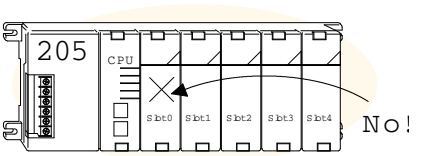
ECEMAIL	IB-711
ECOM100 #	K0
Workspace	V400
Success	C0
Error	C1
Error Code	V400
To	steve@work.com
Subject	Machine Offline
Body	"Machine #" V5010:B "went offline at" _time:24 "on" _date:us

NetEdit3 software

NetEdit3 Software ships free with the ECOM User Manual. Use NetEdit3 to configure the ECOM modules for your network. Flexible addressing allows you to use your choice of protocols and identifying methods. Assign each module a number or a name or both. You don't have to use an IP address, but you can if it's necessary for your network. NetEdit3 uses two protocols for PC-to-PLC communications: IPX and TCP/IP. The NetEdit3 screen displays all identifiers and troubleshooting information for each module on the network. You can use NetEdit3 to adjust parameters for PLC-to-PLC communications by clicking on Advanced Settings. The network identifiers can also be changed from *Direct*SOFT Programming Software.

Choose your slot

The ECOM modules plug into any I/O slot (excluding slot 0) of any local DL205 I/O base. The module maintains identification data, descriptive information, and communication parameters for PLC-to-PLC communications in flash memory. Disconnect power before installing or removing any PLC module.



Note: Use D2-240, D2-250, D2-250-1 or D2-260 CPUs with the ECOM modules. The D2-230 CPU and D2-CM bases do not support the ECOM modules.

Power Requirements

These charts help determine your power requirements

This section shows the amount of power supplied by each of the base power supplies and the amount of power consumed by each DL205 device. The Power Consumed charts list how much INTERNAL power from each power source is required for the DL205 devices. Use this information when calculating the power budget for your system.

In addition to the internal power sources, the DL205 bases offer a 24 VDC auxiliary power supply with external power connections. This auxiliary power supply can power external devices.

Use *ZIP*Links to reduce power requirements

If your application requires a lot of relay outputs, consider using the *ZIP*Link AC or DC relay output modules. These modules can switch high current (10A) loads without putting a load on your base power budget. Refer to the Terminal Blocks and Wiring Solutions section in this catalog for more information.

This logo is placed next to the I/O modules that are supported by the *ZIP*Link connection systems. See the I/O module specifications at the end of this section.

Power Supplied

Device	Price	5V(mA)	24V Auxiliary	Device	Price	5V(mA)	24V Auxiliary
Bases				**Bases**			
D2-03B-1	$132.00	2600	300	D2-06BDC1-1	$194.00	2600	None
D2-03BDC1-1	$150.00	2600	None	D2-06BDC2-1	$184.00	2600	300
D2-04B-1	$143.00	2600	300	D2-09B-1	$220.00	2600	300
D2-04BDC1-1	$171.00	2600	None	D2-09BDC1-1	$238.00	2600	None
D2-06B-1	$176.00	2600	300	D2-09BDC2-1	$238.00	2600	300

Power Consumed

Device	5V(mA)	24V Auxiliary
CPUs		
D2-230	120	0
D2-240	120	0
D2-250-1	330	0
D2-260	330	0
H2-WPLC*-**	680	0
DC Input Modules		
D2-08ND3	50	0
D2-16ND3-2	100	0
D2-32ND3	25	0
D2-32ND3-2	25	0
AC Input Modules		
D2-08NA-1	50	0
D2-08NA-2	100	0
D2-16NA	100	0
Input Simulator Module		
F2-08SIM	50	0
DC Output Modules		
D2-04TD1	60	20
D2-08TD1	100	0
D2-08TD2	100	0
D2-16TD1-2	200	80
D2-16TD2-2	200	0
F2-16TD1P	70	50
F2-16TD2P	70	50
D2-32TD1	350	0
D2-32TD2	350	0
AC Output Modules		
D2-08TA	250	0
F2-08TA	250	0
D2-12TA	350	0
Relay Output Modules		
D2-04TRS	250	0
D2-08TR	250	0
F2-08TR(S)	670	0
D2-12TR	450	0
Combination In/Out Module		
D2-08CDR	200	0

Power Consumed

Device	5V(mA)	24V Auxiliary
Analog Modules		
F2-04AD-1	100	5
F2-04AD-2	110	5
F2-08AD-1	100	5
F2-08AD-2	100	5
F2-02DA-1	40	60 (note 1)
F2-02DA-1L	40	70 @ 12V (note 1)
F2-02DA-2	40	60
F2-02DA-2L	40	70 @ 12V
F2-02DAS-1 F2-02DAS-2	100 100	50 / channel 60 / channel
F2-08DA-1	30	50 (note 1)
F2-08DA-2	60	140
F2-4AD2DA	60	80 (note 1)
F2-8AD4DA-1	35	100 (note 1)
F2-8AD4DA-2	35	80 (note 1)
F2-04RTD	90	0
F2-04THM	110	60
Specialty Modules		
D2-CTRINT	50*	0
D2-CM / D2-EM	100/130	0
H2-CTRIO	400	0
H2-CTRIO2	275	0
D2-DCM	300	0
F2-DEVNETS	160	0
F2-SDS-1	160	0
H2-PBC	530	0
H2-EBC100	300	0
H2-EBC-F	640	0
H2-ECOM100	300	0
H2-ECOM-F	640	0
F2-CP128	235	0
Remote I/O		
H2-ERM100, (-F)	300, (-F: 450)	0
D2-RMSM	200	0
D2-RSSS	150	0
Programming Devices		
D2-HPP	200	0

*requires external 5VDC for outputs
Note 1: Add an additional 20 mA per output loop.

Power Consumed

Device	5V(mA)	24V Auxiliary
Operator Interface		
DV-1000	150	0
C-more Micro-Graphic	210	0